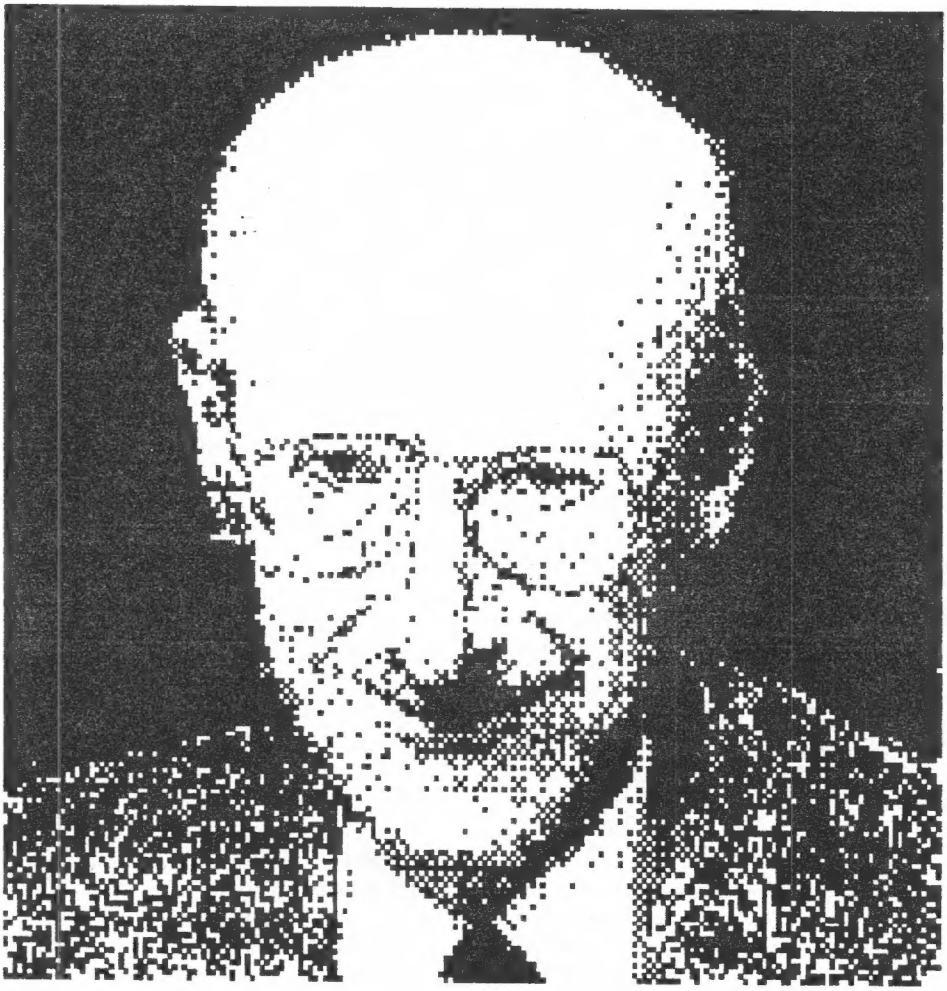
THE RAMTOP

Published by the Cleveland Timex Sinclair Users Group

Winter 1993



Inside This Issue:

Trouble Free QL

Printer Cable Mystery

BBS & Packet Information

Parallel Ports and Cables

In the Wonderful World of Connectors and Cables for the Parallel Ports on Microcomputers. Or How Do You Squeeze 36 Wires Into a 25 Pin Connector.

by Ken Phillips

Centronics Parallel Pin Outs

Pin	NAME	SOURCE	DESCRIPTION
1	Strobe	Computer	Data Lines Are Valid
2-9	D0-D7	Computer	Data to be Printed
10	Acknowledge	Printer	Data has been Accepted
11	BUSY	Printer	Printer can't receive data
12	Paper Out	Printer	No Paper in Printer
31	Input Prime	Computer	Resets Printer
32	Error	Printer	Printer Error
20-27	Returns		Grounds for D0-D7

In the early days of microcomputers a company called Centronics had the first printers available at a price (barely) within reach of the computer buyer. Of course they put their own socket on the computer. It was a 36 pin socket and it remains the same today on most any brand of printer you can buy. The Parallel port on the computers has become a bit more standardized with the use a DB25F, a twenty five pin socket. Female.

This is known as the standard Centronics parallel interface. This is the most widely used interface on personal computers, because unlike the RS-2312-C serial interface, it usually does not require set up commands or special configurations on either the computer or printer.

The pin connections are shown below. It is rather easy to connect a 25 pin connector on one of a cable and a 36 pin connector on the other end and still get the connections correct.

IBM PRINTER CABLE
Centronics DB25 MALE

36 PIN	25 PIN		I/O	
1	1	STROBE	I	Reads in Data
2	2	DATA	I	Data to be printed
3	3	DATA	I	Data to be printed
4	4	DATA	I	Data to be printed
5	5	DATA	I	Data to be printed
6	6	DATA	I	Data to be printed
7	7	DATA	I	Data to be printed
8	8	DATA	I	Data to be printed
9	9	DATA	I	Data to be printed
10	10	ACK	O	Acknowledges receipt of data
11	11	BUSY	O	Busy, Hold the data
12	12	PAGE END	O	Out of Paper
13	13	SELECT	O	On Line
14 NC	14 NC			
15 NC	15 NC			
16 SG	16 SG			Signal Ground
17 GND	17 GND			Chassis Ground
18 HI	18 HI		O	Printer On (+5V)
19/30 GND	19/25		I	Data Signal Grounds
31 RESET	??		I	Resets Printer
32 ERROR	??		O	Printer in error State(Low)
33/36 not used				

An easy way to make a 25 to 36 pin printer cable is to use 25 conductor ribbon cable and press on connectors. If the number 1 pin on both connectors are aligned with the same conductor on the ribbon cable the cable will

How to have a Reliable QL

I wrote the following article a couple of years ago, meaningto submit it to a user group newsletter. I never did send it in. The information in it is still valid and so with a few updates at the end, here it is...

John J. Impellizzeri

Much has been written about the QL and its problems with the microdrives and locking up. Recently there have also been articles about various solutions to the problems. While I have not discovered any new cures, I am going to write about my experiences with my QL. As far as the microdrives are concerned, my solution was disk drives. The mdv's were OK for me until my Archive and Quill files grew too large to fit on the cartridges. They seemed reliable enough if used with care, they just didn't hold enough.

I ordered my QL from A+ Computers at the 1987 Indianapolis show. When I received it I set it up using a TV for a monitor as all the other peripherals I had were specifically for my ZX81/TS1000 syste It seemed reliable enough as I began using and learning this new system. At this point the QL had never locked up or crashed except for when I was poking around where I shouldn't have been. Not too much later I realized I was going to need more RAM. I ordered an external 512K RAM board and RAM disk software. I also obtained an RGB monitor. This arrangement worked well for a while and the QL tolerated the RAM board just fine, although I did notice the power supply was a little warmer. I first started noticing a problem after I added a Cumana disk interface. I suspected the interface at first but after trying just the interface and the QL it was fine. Only when I had the RAM and the disk did I have problems.

The power supply and the QL both got very warm. I should mention that my entire system is plugged into a surge protected and filtered power strip. While we don't seem to have any problems in this area with 'dirty' power, I like to use the strip just to be on the safe side. It also seems to help when any major appliance in the house starts up. The lights sometimes dim or flicker, but my system isn't bothered. My first solution was a small cooling fan purchased at Radio Shack and wired to be on whenever the QL was. The fan was aimed at the QL's heatsink in the microdrive area. This worked and though the fan is pretty quiet, I still wanted a better solution.

I had received back issues of Quantum Levels which had a series on solving the QL's ills. I also got a copy of the May 1989 CATS newsletter which had many solutions. All of the modifications I made were taken from these two publications. Some of the modifications that were suggested I found had been done already. Some uncovered definite trouble 'under the hood'. Others I made just to be safe.

So, starting from the top; After removing the top cover and disconnecting the keyboard tails, the first thing I checked was the DC voltage at the regulator. Using a digital meter I measured 4.91 volts. I then checked the voltage at the jumper wire to the 68008 and measured 4.87 volts. This was a slightly lower than what the CATS article recommended, although it may be due to the calibration of my meter. To be sure I replaced the regulator with a fresh new one and didn't notice any change. What I did find when I replaced it though was that what little silicone grease was between the regulator and the heatsink had dried up and flaked off. After removing the old stuff and applying liberal amounts of new grease I replaced the regulator and added the recommended bypass capacitor right at the pins to the chip. Next I added the 20 ohm shunt resistor near the expansion connector.

The CATS article mentioned a straggly jumper supplying power to the CPU. On my QL I found a nice solid 20 gauge wire. I then added a 10 uFD tantalum cap at the CPU in parallel with the existing cap. The article also mentioned making sure that a ground trace on the board was cut. I found that mine was. Even though they looked okay, I resoldered all the connections to the 'spiderboard'. I also tied the unused pins (1,3 and 5) high and added a bypass cap here. Bypass caps were also added at the 8301, 8302 and 8049 chips. The articles in Quantum Levels suggested adding a cap between the 8301 and the first ROM chip along with bypass caps at IC26 (serial port receiver). These additions were also performed.

Next the QL circuit board was completely removed from the bottom half of the case for the following. The solder connections to the power connector were checked and found to be very poor. When I wiggled the connector I could see that the connector pins were barely making contact with the traces. All of the old solder was removed and I removed the connector and filed the pins until they were shiny and then resoldered it. The power connector now was very solid. Quantum Levels also recommended adding bypass caps to each RAM chip. I found that these caps had already been added to my QL.

The only other change I have made is to replace the ROM chips with an EPROM version from Sharp's. This helped to keep the heat sink cooler and I also upgraded to the MG version. There were a few other suggestions that I haven't

Paralell Cable Connections Continued

operate successfully. The pins above number 25 on the Centronics plug are ignored.

Different printers may require different signals to some of the pins. Some of the TANDY TRS80 computers require a different cable. The later models appear to use the above cable, which is called simply the IBM Parallel Printer Cable.

The main interest in this paper is getting the correct connections to connect two computers together to transfer data through the parallel ports.

The LAP-LINK Program will be considered. Perhaps the cable will work with other programs. It will be tested later. The Parallel cable for the LAP-LINK program uses 11 wires. They are connected as follows:
Lap Link 3 Parallel Cable

DB25 Male Plug		DB25 Male Plug	
2	———	15	
3	———	13	
4	———	12	
5	———	10	
6	———	11	
10	———	5	
11	———	6	
12	———	4	
13	———	3	
15	———	2	
22	———	22	(Added by Herb Carden)
25	———	25	**Shield**

Since all eight of the data lines are not used it appears that the LAP-LINK program is transferring just 4 bytes at a time. This is a NIBBLE. When the cable is made correctly it will nibble away at the transfer!

The high cost of DB25 plugs and cable make the cost of fabricating a cable seem rather high. Look at the low cost cables available that are ready made. I took a Male to Mail serial cable and modified it to match the above connections. The cable looked like it had molded ends until examined the connectors closely. The hoods on the connectors were a plastic shell that snapped together.

I removed the plastic hoods and had easy access to the pins on the connectors. The wires were soldered on so it was easy to disconnect them. The wires on one end of the cable were unsoldered from the pins and tagged with the pin number.

The wires were resoldered to the connections as indicated in the illustration above. The first time I tried the cable it did not work. I discovered that I had 'guessed' at the pin number There it is... seems like it should be reformatted for your screen .

Note by Herb Carden
Ken has been in our community for many years. As a avid HAM he has done many years of study and experimentation. The following is a very good work on the study of parallel cables (LapLink included). Only one addition needs to be interjected in the last diagram.. I reverse engineered a LapLink Parallel cable to find Pin/Wire #22, that was missing from Ken's diagram.

TURN OFF CALLWAITING

by Chris Wade

To turn off call waiting for the duration of one call, you must in your dialing command include this string: "*70," for touch tone or "1170," for pulse dialing.

Example ATDT*70,433-0062 (or ATDP1170,433-0062)

What the command does is dials the phone company code to turn off callwaiting for the duration of the call, it pauses for the comma, and then dials 433-0062. The callwaiting cancel only lasts for one call, so I would suggest adding it to your dialing string or your programs equivalent.

More Listings

One of the things that we at Ramtop try to do is provide useful information. While I don't use Freenet, since I view that network as an extension of and as connected with the self agrandisement of the looby academic (Grundner) who promotes that system for his own financial benefit.; There are some of your who may disagree with me since Freenet does provide an easy internet access. It is for these people that I present the following list.

PUBLIC TELECOMPUTING NETWORK

Big Sky Telegraph - Dillon, Montana
Modem: 406-683-7680
Internet: 192.231.192.1 Visitor login: bbs

Buffalo Free-Net - Buffalo, New York Modem: 716-645-6128 Internet: freenet.buffalo.edu Visitor login: freeport

Cleveland Free-Net - Cleveland, Ohio
Modem: 216-368-3888 Internet: freenet-in-a.cwru.edu
Visitor login: Select #2 at first menu

Columbia Online Information Network (COIN) - Columbia, Missouri
Modem: 314-884-7000 Internet: bigcat.missouri.edu
Visitor login: guest

Denver Free-Net - Denver, Colorado
Modem: 303-270-4865 Internet: freenet.hsc.colorado.edu

Heartland Free-Net - Peoria, Illinois
Modem: 309-674-1100 Internet: heartland.bradley.edu
Visitor login: bbguest

Lorain County Free-Net - Elyria, Ohio Modem: 216-366-9721 Internet: freenet.lorain.oberlin.edu Visitor login: guest

Medina County Free-Net - Medina, Ohio
Modem: 216-723-6732
Internet: <Not connected at this time>

National Capital Free-Net - Ottawa, Canada
Modem: 613-780-3733
Internet:freenet.carleton.ca
Visitor login: guest

Tallahassee Free-Net - Tallahassee, Florida
Modem: 904-488-5056 Visitor login: visitor

Tristate Online - Cincinnati,
Modem: 513-579-1990
Internet: cbos.uc.edu
Visitor login sequence: cbos, visitor, 9999, <return>

Victoria Free-Net - Victoria, B.C.
Modem: 604-595-2300
Internet: freenet.victoria.bc.ca
Visitor login: guest

Wellington Citynet - Wellington, New Zealand
Modem: +64-4-801-3060
Internet: kosmos.wcc.govt.nz
Visitor login: <Service not available>

Youngstown Free-Net - Youngstown, Ohio
Modem: 216-742-3072
Internet: yfn.ysu.edu Visitor login: visitor

For More Information on NPTN Contact:

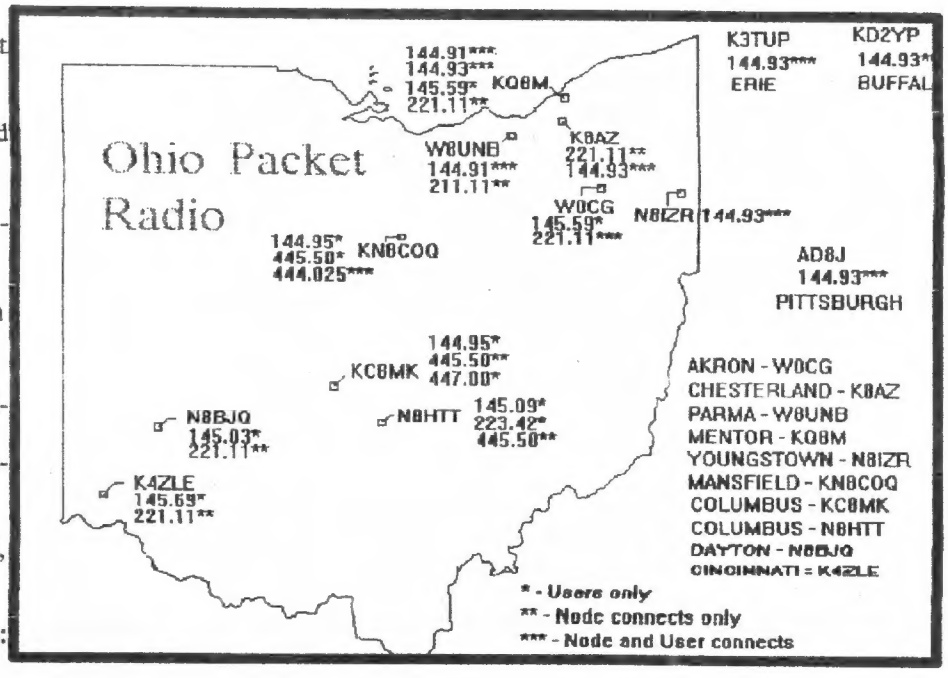
National Public Telecomputing Network P.O. Box 1987 Cleveland, Ohio 44106 FAX: 216-247-3328 e.mail: info@nptn.org

Or visit our anonymous ftp site at: nptn.org (cd into:/pub/info.np83tn)

Tom Grundner [B President, National Public Telecomputing Network -- e.Mail: tmg@nptn.org Voice: 216-247-5800 FAX: 216-247-3328

We need articles and reviews for the Ramtop. Other publications are free to reprint anything from our newsletter as long as it is properly attributed. **The RAMTOP** is a newsletter dedicated to the interests of Sinclair Computer enthusiasts, no matter what computer they now may be using. We will try to support all machines, but we **need** your contributions.

Packet Anyone?



QL Serial Connections

The following information came from Timelinez via the ZX appeal and fit in with our current articles on connectors. The first diagram is provided by Harvey Taylor and the Later one and program were written by Mark Wahl and Terry Greenlee. We believe the information is worth repeating again as some may have lost or misplaced it. (ed)

QL connection between the QL and a modem

QL (SER2)	Connections	Modem (DB-25)
1 GND		7 GND
2 TxD		2 TD
3 RxD		3 RD
4 NC		
5 NC		
7 tied to QL pin 1		
9 +12v		4 CTS
9 +12v		20 DTR

QL to PC Cable Connection

QL	PC
1 GND	GND 1
2 TxD	TxD 2
3 RxD	RxD 3
4 DTR	CTS 4
5 CTS	RTS 5
6 NC	DTR 6
7 GND	GND 7
8 NC	DTR 8
9 NC	NC 9-19
	DTR 20
	NC 21-25

NB. Pins 6, 8 and 20 on the PC are tied together. The rest of the connections are pin to pin.

Now connect to Ser1 on the QL and to COM1 on the PC.
On the QL type the following program:

The Ramtop

Winter 1993

Is published quarterly by the Greater Cleveland Timex Sinclair Users Group

Thomas Simon, Editor
Ted Knyszek, Production
Jon Kaczor, Distribution

Please send editorial contributions and correspondence to
615 School Ave., Cuyahoga Falls, Ohio 44221


```
10 BAUD 1200
20 OPEN #4; SER1r
30 PRINT INKEY$(#4);
40 PRINT #4;INKEY$;
50 GOTO 30
```

AFTER RUNNING THE PROGRAM TYPE ON THE PC : **MODE COM1:1200,N,8,1,P**
CTTY COM1

IF SOMETHING LIKE A> OR C> SHOULD APPEAR ON THE QL SCREEN THEN YOUR CABLE WORKS. TYPE DIR AND CONTROL -M TO VIEW DIRECTORY OF THE PC. TO RETURN CONTROL OF THE IBM TYPE: **CTTY CON**

Reliable Continued

done. I didn't add the second regulator as the original one seems to be doing fine since I changed to the EPROM and added the shunt resistor. I also didn't add the RGB buffer circuit since I haven't had any trouble with this area and I noticed that my QL did have the 'protection' diodes added to the video chip. The CATS article talks about looking at the data lines with an oscilloscope and experimenting with different size caps on the data lines to clean them up. While I do have a scope, it's only a 5 MHz job and no match for the signals bouncing around in the QL. I figured with all the changes that I did make I would just put the QL back together and see what happens. If needed, I would proceed further.

After all the modifications, my QL, to date, has not had any problems with locking up or crashing. I should mention that my QL's serial number is 5282. I have a back up QL that just sits around in case this one decides to die. It is an earlier production unit (# 3399) and I intend to disassemble this one soon and see what I can find. I highly recommend that anyone with a QL that has problems obtain a copy of these excellent articles and 'tune up' their QL. It is definitely worth it!!

Since I wrote the above I've made a few changes. In place of the Expanderam and Cumana disk interface I now have a Gold Card (v 2.28). I have a 3.5" 3.2 MB floppy, a 3.5" DD/HD floppy and a 5.25" DD floppy. I have also replaced the 8049 co-processor chip with the Hermes 8749 chip. My QL still performs flawlessly even when left on for days. There have been no unexplained crashes or lockups. I still haven't looked at my spare QL to check it out as my main QL runs great! It is ultra-reliable.

References

CATS Newsletter **(May 1989)**
Quantum Levels **(1-1, 1-2, 2-2, 2-4, 2-5)**

Local Resource

Mechanical Affinity (a stateside dealer selling NEW QL stuff, as well as items for the entire Sinclair/Timex line of computers) has made some recent deals: Call or look for a NEW catalog. They now have Hard Drive Kits. They have special deals on HERMES, MINERVA, and the GOLD CARD. They have the latest Software from England and Europe. Also in STOCK but in limited supply: QXL!!!! a QL operating system/device that plugs in to a IBM type of PC, Brought to you from the hard working folks MIRACLE SYSTEMS who made the TrumpCard, The GoldCard, the parallel printer interface, and other hardware items that we find indispensable. Paul is at **317-291-6002,** and Frank is at **317-473-8031**

First Report: The QXL Card

By James Hunkins, CIS 72567,3624

The following article was originally a message appearing on CIS. Since none of us in our group own a QXL card I thought that someone's opinion with real experience with that card would be helpful.(ed.)

It finally arrived, my very own QXL card. And I can say that it really does work (that is after I ignored the documentation saying not to touch the dip switches and set them to the default state the documentation said they were shipped in - Whoops, it happens to the best of us!).

To cover a few of my early discoveries:

SPEED: no question about it. Viewing a file on the screen is great, but don't copy it to the screen. It will be done before you hit the final keystroke! It actually seems to display text faster than DOS based VGA text on my 486 DX2.

continued

QXL Continued

VIDEO: now this is great. If you have the pointer environment (you should) you can configure it to come up in QL resolution which uses about 2/3s of the VGA monitor screen. You also have a choice of VGA resolution (640x480) or SuperVGA (800x600) if your card supports it. The extra space only works for Pointer Env programs for now. How about a 44 line deep QD editor text file (in VGA mode, Super VGA is too fine detailed on my small monitor and my tired eyes).

PARALLEL RUNNING with DOS/WINDOWS: not a major problem so far. You can switch back and forth between DOS and QXL with a simple command. To run from within Windows 3.1 just run it under a full screen DOS prompt box. Switch between it and windows applications with the ALT TAB keys. If you shrink the QXL to a window versus full screen, you get a message stating that you can not run it but can view it alright. To recover just select the QXL window and do the ALT ENTER key to get full screen again. Will check into possible a PIF file that will support operation ? OS2 usage, probably more successful and have no way of trying it myself.

HARD DISK ACCESS: yes it works, but currently keep the size at 63 Meg or less. If set to 64 or higher, it seems to think that it is actually much smaller, even though it takes up disk space for it all. Otherwise, looks just like a super large floppy. (Floppy access can read DOS or QL floppies transparently!)

MEMORY: my card came with 2 Meg of memory in 16 256x4 bit packages. I presume that the other size allowed is a pin compatible 1024x4 bit package. Without documentation, I am guessing that you have to populate each 1/2 of the slots with the same memories. This means if I want to increase my memory, I will have to waste at least 1M (8 256x4 parts) and replace them with the larger size. Plans are to buy 8 of the 1024x4 memories and bring my card up to 5Meg for now (1 + 4 M).

PROBLEMS: still not running SuperBASIC programs with line numbers or structures. however all machine code programs tried so far ran great! Have not gotten the Parallel port to work yet (probably my problem) and there is a major bug when closing out Pointer Env programs. The programs leave the job list but the windows are not entirely cleared. If I CNT C into these 'blank' windows too many times it crashes QXL, but I can usually recover to DOS and restart.

OVERALL: glad I didn't wait to buy it. Finally, my PC is a real computer. As the software updates come in, it will be getting really exciting around here. For anyone who can afford it (who needs to eat?), it kick drives an already powerful computer system into modern system performance levels, while retaining the QL's easy and effiecient operating system/look!

More news on the way as I dig deeper.

Well there you have it. One other bit of information, the QXL card does not run with WINDOWS NT. Apparently there is some recognition problem with that system. But too I don't know anyone using WINDOWS NT either. (ed.)

Sinclair FIDO Nodes

Britain ():

TF Services QBBS +44-344-890987
Fido 2:254/67 Tony Firshman

Heart of Gold +44-
Fido 2:254/67.6 Lester Wareham

Nene Valley +44-933-460538
Fido 2:255/56 Phil Borman

Ursus Fremens Rexx +44-772-828975
Fido 2:255/121 Colin Adams

Jim's Place +44- Fido 2:255/121.3
Jim Gilmour Blanford +44-256-331998
Fido Aspects +44-617-920260 Fido

More Fido Listings

Blanford +44-256-331998

Fido Aspects +44-617-920260

Fido FLUFFY OWLS BBS +44-91-4775472
Fido 2:256/65 Derek Stewart

Lau's Place +44-
253-780021

Fido SW Mail Centre
+44-392 412362
Fido

Fourth dimension BBS
+44-202-600305
Fido 2:255/26
Wayne Weedon

The Little Green Forst
+44-
Fido 2:255/30
Robert Weeks

Netherlands (5):
SYNCNET +31-
35-237178
Fido 2:283/1
V32bis/HST Jan Bre-
denbeek

QLAT +31-30-
962265
Fido 2:283/508
Marco Holmer

Sinclair Box +31-1670-65298
Fido 2:285/751 Jack Raats

KU-EL-TEL +31-1650-37105
Fido

Endeavor +31-1751-41908
Fido

Italy (2):

Andromeda +39-6-
3701211
Fido 2:335/21 V32bis,
Davide Santachiara

QITALY BBS +39-
342-590451
Fido 2:331/123 V32bis
Eros Forenzi

Portugal (1):
Ajuda BBS +351-1-
3648027
Fido 2:283/1.25

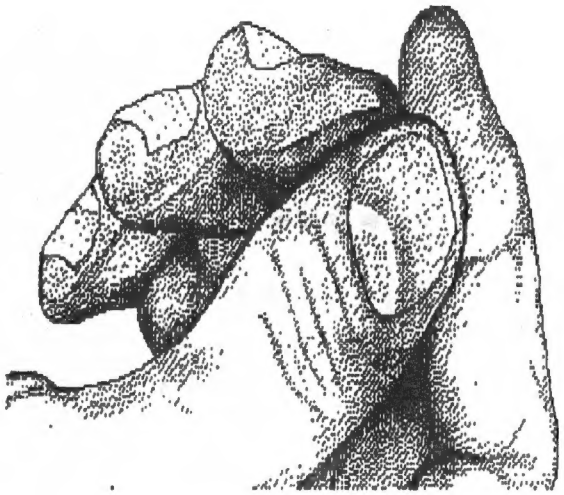
Compiled by Tiago Leal ---
* Origin: DDEXT (2:283/1.25)

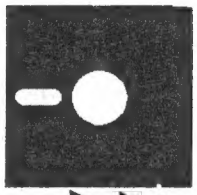
To contact other users on these fidos use the node# and send mail via your local fido BBS

Things to Come

Well we have a lot of material in the newsletter this time. However most of it came from external sources. If the newsletter is to work I believe that everyone must contribute. I think that we have made it as easy as possible to help the life blood of our group keep pumping. If you, the readers don't want to contribute to the newsletter, then say nothing and it will be folded at the end of the year. If you do want a newsletter then contribute to it. I know the usual excuses, but find the time just once a year to contribute something! Or lose the newsletter entirely.

I will try to finish one of my many unfinished programs for the next issue. We would like to thank Doug for showing us his Gold Card on his QL at the last west side meeting. The Christmas meeting was a great success primarily for the buyers. We saw quite a few bargains, and I hope that everyone was satisfied. Doug was the big buyer, one of these days he may have something to sell or so it is rumored. I picked up VGA and IDE cards for my PC. Luckily too, since I may have to replace my hard drive in the near future. We would like to hear from other groups and perhaps have a joint meeting like we did in Columbus several years back. The older Timex and Sinclair Machines are pretty long in the tooth now, only the QL seems to be more or less contemporary. The Spectrum Emulation Programs for the PC are a real find. I recently had a chance to use a program called Claris on a MAC and I was far from impressed by either the machine or the software. There is something inherently clunky about a mouse based word processer. Even to eject the disk, the mouse was used to access a menu which had to be pulled down! The Editor and the Quill both seem better than this as well as quite a few PC programs. However I have seen the MAC used under different circumstances where it really looked good. Quark Express seems to be the best of the desktop publishers but I hope to try Ventura soon. Well we hope to have good things to publish in the newsletter with your help and will continue through the year.





The Ramtop
4568 Williamston Ave.
Brooklyn, Ohio 44144

The ZX Spectrum 48/128 Emulator For IBM & Compatables: Z80 Version 2.01

Turn your PC into a real ZX Spectrum 48/128!
The fastest, most compatible and most complete emulator available! Main features:

- Full Spectrum emulation, border, flash, beeper, Interface I, Microdrive in cartridge file, RS232 input and output redirection to file, COM or LPT, joystick support, 128K sound through Soundblaster or internal speaker, built-in monitor,
- Able to load ANY, even protected or speed-saved program from tape, to save to tape, to redirect tape loads and saves to disk for easy file access,
- 2500 line English documentation, frequently-asked-questions file, PostScript file of doc, keyboard help screen, utilities to convert Spectrum screens to .GIF and .PCX files, convert snapshot files and tape files from 5 other Spectrum emulators to own format and vv., to read DISCiPLE and +D disks,
- Z80 processor emulation including R register, inofficial instructions, inofficial flags,
- Runs okay under DOS, Windows and DesqView,
- Full source code of emulator and utilities included!

Runs on any 640K PC; too slow for practical use on PC/XT's but fast enough on AT's; runs at about 100% on 16MHz AT's (can be slowed down on faster machines), uses VGA/EGA/CGA or Hercules.

This program costs US$ 20. You will receive a 3.5" DD disk (5.25" disks on request), and you'll be kept informed about updates. Please send bank notes, name and address to:

Gerton Lunter
P.O. Box 2535
NL-9704 CM Groningen
The Netherlands

If you send a cheque, please add US$ 15. Please allow 4 weeks for delivery.